Horizon
The EU Research & Innovation Magazine

European Commission

Braving the cold: Europe's polar research strides forward with new polar hub

In 2025, the EU will set up a new polar research body that will operate from Sweden, while scientists drill deep into polar ice to study the Earth's climate history and help mitigate the effects of climate change on this fragile ecosystem.

02 January 2025 - By HELEN MASSY-BERESFORD

German scientist Dr Nicole Biebow is keenly aware of how important it is to research and protect the Earth's increasingly fragile polar regions.

The two poles are warming faster than any other area on the planet and are losing ice through increased melting. The Arctic, for example, is warming three times as fast as the global average, according to polar scientists. This affects local communities and wildlife, but also has broad socio-economic and climate impacts that extend across the globe, like rising sea levels.

"We always say that the poles are the canary in the coal mine," said Biebow, the project coordinator of an EU-funded project named EU-PolarNet 2, which concluded in December 2024.

Biebow is the head of the international cooperation unit at the Alfred Wegener Institute in Germany and also a former chair of the European Polar Board (EPB). The EPB is an independent group of research institutes, funding agencies and ministries set up to advance the coordination of European polar research both in the Arctic and Antarctic.

The EPB and another key polar research body, the European Polar Coordination Office (EPCO), will be operating out of Sweden's far north from 2025. This reflects Europe's determination to be the leading voice in studying these high-latitude regions.

EU-PolarNet 2 carried out much of the work to establish the EPCO, which will start work in January 2025, hosted by the Arctic Centre at Umeå University, Sweden.

A sense of urgency

As global temperatures increase and the polar ice melts ever faster, unlocking the secrets of the polar regions is becoming increasingly urgent.

“A lot of work being done nowadays is about understanding, mitigating or adapting to future changes,” Biebow said, noting that “we have EU Member States that have an Arctic coastline and people living in these areas”.

As the EU-PolarNet 2 team prepares to launch EPCO, the researchers have put together a list of priorities for future research, including projects on sea ice, melting glaciers and thawing permafrost.

Biebow voiced hope that EPCO will considerably help research efforts in the polar regions.

“The poles, like the deep ocean, are still very, very sparsely investigated,” she said. “It’s an area which defines how our future weather and climate will be, and that’s why it is so important.”

Working with indigenous communities

Dr Annette Scheepstra, a researcher and member of the EU-PolarNet 2 executive board, is putting the focus on working with experts from local indigenous communities who have deep knowledge of the polar regions.

Indigenous communities make up around 10% of the 4 million or so people living in the Arctic region. Until now, they have often been sidelined in polar research efforts.

“We work with rights holders – indigenous communities or organisations – as well as with indigenous scholars, indigenous people who are researchers themselves at universities or institutes,” said Scheepstra, a doctor of Arctic and Antarctic studies at the University of Groningen in The Netherlands.

“For many years, people have said it’s important to include indigenous knowledge holders or to work with them. But how? Often, that has not been addressed, and that’s my interest,” she said.

Cooperation with indigenous people is now based on the principles of upholding their rights, respecting their culture and society, avoiding any harmful impact on their communities, and embracing their knowledge in shaping scientific ideas about the Arctic.

Scheepstra’s work has included working with the Saami Council, an NGO representing the rights of the Saami people living in Finland, Norway, Russia and Sweden to set out a roadmap for research.

“It is really nice working with indigenous knowledge holders because they often have quite a holistic perspective on things,” she said. It is also a good way to ensure that the projects in the region can really succeed.

Breaking the ice in the Antarctic

Out in the field, many researchers are focusing both on melting ice and threatened species. This is the case with a seven-year EU-funded project named Beyond EPICA. It builds on a previous EU-funded research project named EPICA, which used polar ice samples to reconstruct the Earth’s climate going back 800 000 years.

This time, researchers coordinated by Carlo Barbante, a professor of environmental sciences at Ca’ Foscari University in Venice, Italy, aim to extract ice in the Antarctic that is well over 1 million years old.

“That is a period of time in which the way the climate of our planet operates completely changed,” said Barbante, who is also a member of the EPB. The project he coordinates runs until June 2026 and involves teams from 10 European countries.

His team’s working conditions are extremely challenging.

At a sparse camp in eastern Antarctica, 16 members of the Beyond EPICA research project team have settled in for several weeks of living and working in a harsh environment.

Their temporary home is just a few tents and containers set in the dazzling-white deserted landscape.

Even though it is almost summer in Antarctica in early December, at 3 200 metres above sea level, temperatures at the Little Dome C Camp average around -52°C and can drop to -60.

The team is there to drill down thousands of metres to extract and analyse samples of the Earth’s oldest ice and, with them, the vital information they contain about how our planet’s climate has evolved over time.

The climatologists’ giant drill steadily makes progress down through the ice, passing the 1.8-kilometre mark already. The drilling process is electronically monitored every step of the way, and the hole has a diameter of only 10 centimetres, so environmental impact is minimal.

But why the drilling?

“The ice can give us information about the composition of the air and the temperature of the planet in the past, and help us better understand how the climate works,” Barbante said.

Research in this article was funded by the EU’s Horizon Programme. The views of the interviewees don’t necessarily reflect those of the European Commission. If you liked this article, please consider sharing it on social media.

More info

- EU-PolarNet 2
- EU-PolarNet project website
- European Polar Coordination Office
- European Polar Board
- Beyond EPICA
- Beyond EPICA project website